

Strategic Analysis Paper

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Water Scarcity, Migration and Regional Security in South Asia

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Key Points

- Water scarcity alone does not trigger population movements. Other factors such as political tensions, transboundary relationships and existing poverty and inequality will determine whether migration is likely to occur.
- Rapidly increasing populations, urbanisation and increased environmental pollution have placed significant pressure on water resources in South Asia.
- It is expected that the majority of environmental migrants in South Asia will originate from Bangladesh, where mitigation efforts will not be enough to prevent the impacts of climate change events such as sea-level rise.
- Climate change and extreme weather events are expected to create millions of “environmental migrants” by 2050
- Basin-wide water management, water sharing agreements and treaties are key to addressing the impacts of water scarcity, ensuring regional security and preventing the need for migration.

Summary

Water is essential for human health, agriculture and livelihoods. Its depletion is predicted to lead to conflict, instability and migration. Irrigated agriculture contributes to a large portion of food production in South Asia making it highly vulnerable to predicted changes in the runoff of major rivers. Large parts of South Asia exhibit a near-permanent state of water stress and this is expected to be further exacerbated by climate change. Water scarcity will exacerbate existing problems such as poverty and food insecurity, while creating instability and potentially driving mass migration. More recent studies, however, warn that linking water directly to conflict and migration is too simplistic. A lack of water resources alone is

usually never the only factor that drives migration. Migration is dependent on many other factors that might exist alongside water scarcity including: socio-political tensions and pre-existing conflict, such as border disputes, and water infrastructure projects such as dams and reservoirs. Other factors may include existing poverty, political leadership, and investment and mitigation efforts. These contributory factors need to be better understood in order to develop policies that address local and international population movements linked to water scarcity in South Asia.

Analysis

Water Scarcity in South Asia

There are six transboundary rivers (the Red, Mekong, Salween, Irrawaddy, Ganges-Brahmaputra-Meghna and Indus Rivers) that originate in south-west China and are shared by 12 riparian countries including those of mainland South Asia (Bangladesh, Bhutan, India, Nepal and Pakistan). These rivers and their tributaries are the source of water, food and livelihoods for over one billion people. Over the last few decades, however, rapidly increasing populations, urbanisation and increased environmental pollution have placed significant pressure on water resources. The basins are also increasingly being used to develop extensive water infrastructure for power and irrigation expansion, with several large-scale hydropower dams currently in operation and several more in the planning stage. Most areas of South Asia are in a permanent-state of water stress as a result of overexploitation, poor management and climate change-induced rainfall variability. Water is becoming an increasingly contested commodity and, as a result, shared waters pose a great risk for conflict in the region.

Transboundary Water Resources and Migration

The risk of conflict could arise from the declining availability of water resources in countries that share water basins and transboundary rivers. Higher risks are associated with upstream countries that heavily rely on water flow from neighbouring countries. With rapidly growing populations and dwindling resources, countries will be increasingly protective of their water share. Several South Asian countries, including China and India, are planning to divert water from some of these transboundary rivers. Infrastructure development can reduce water availability to downstream riparian countries and they therefore need be managed carefully to avoid tensions.

India, Bangladesh and Water Infrastructure

The development of the Farakka Barrage by India on the Ganges River has reduced water flow during the dry season in downstream Bangladesh. Overexploitation of groundwater in Bangladesh has resulted in most dwindling supplies, which has been compounded by reduced rainfall during the wet season. During the dry season, many wells fall below a critical threshold and become inoperative, leading to a lack of access to water for drinking and irrigation. It is expected that recharge may further decline due to reduced rainfall as a result of climate change. Any further upstream river development could significantly exacerbate the situation.

The Farraka Barrage was constructed over four decades ago, and still impacts on the livelihoods of many in Bangladesh today. People are forced to migrate as the rivers dry up during the dry season. Groundwater is currently being depleted to irrigate crops due to the increasing unavailability of river water. It is expected that the groundwater supply will be completely depleted within ten years if water continues to be extracted at its current rate. Experts have said that sufficient water supply would have been available had the Farraka Barrage not been built. The barrage continues to be a source of tension for the region and it is likely that there could be increased population movements from the region dependent on the Ganges into other parts of Bangladesh in coming years.

It is expected that the majority of environmental migrants in South Asia will originate from Bangladesh, where mitigation efforts will not be sufficient to prevent the impacts of climate change events such as sea-level rise. Rising sea levels are expected to submerge a large portion of Bangladesh, potentially forcing 18 million people to migrate. Population movement from Bangladesh has traditionally been towards India, particularly to the north-east, but this is expected to expand to movements internationally as India would be unable to cope with the expected number of migrants. This has put higher pressure on limited resources and led to communal tensions. Current agreements and arrangements on the Farakka Barrage do not take into account climate change and the expected reduction of rainfall during the dry season. To effectively mitigate these impacts a basin-wide approach to water management, which includes Nepal, will be required to ensure there is sufficient flow in the Ganges during the dry season.

Transboundary Water Resource Management (India and Nepal vs. India and Bhutan)

The importance of transboundary water resource management can be seen through the transboundary relationship of India and Nepal in comparison to that of India and Bhutan. India has had an uneasy relationship with Nepal over water resources due to failures of previous treaties such as the Kosi and Gandak river treaties. The unresolved treaties have heightened bilateral tensions and have made it difficult to develop new water management agreements. India could potentially see greater flood controls during the monsoon season and flow augmentation during the dry season through the development of Nepal's hydropower capacity. This has the potential, however, of being delayed due to tensions that increase the likelihood of population movement due to flooding and drought.

In contrast, India has a positive relationship with Bhutan through mutually beneficial water resource management agreements. Bhutan's hydroelectric dam projects have been funded by India, with India being Bhutan's largest customer for hydropower. This agreement reduces the risk of conflict and increases the potential resilience to water scarcity.

An effective water resource management agreement has the potential to reduce the risk of migration due to increased security as well as the increased likelihood of the sustainable use of water resources by each country. Co-ordinated efforts can also reduce the likelihood of drought through the fair allocation of water resources. If regional states begin to manage their water resources on a basin-wide level the potential for migration as a result of increased water stress could be avoided.

Kashmir Rivers and Indo-Pak Relations

Kashmir has been the source of three conflicts between Pakistan and India (1948, 1965 and 1999). All of Pakistan's major rivers flow from the Indian administered region of Kashmir, making it a source of tension between the two neighbours. The recent construction of the Baglihar Dam and the Kishanganga Dam over rivers flowing to Pakistan through Kashmir has increased tensions. These dams will allow India to have greater control over water flow to Pakistan.

The Indus River is also another source of tensions between the two countries. The Indus Water Treaty has been able to provide the means to resolve issues since it was signed in 1960. There have been calls, however, to develop a new agreement which takes into account population growth and the impacts of climate change on stream flows. The Siachen Glacier that supplies water to the river is currently melting faster than all other glaciers in the region. Approximately 90 per cent of agriculture in Pakistan relies on the Indus River. Its increased scarcity has led to the migration of farmers, who have experienced increased water stress.

Tensions have also increased recently due to India's plans to construct 155 hydropower projects in Kashmir that Pakistan believes violate the Indus Water Treaty. The secrecy of these plans have increased distrust between Pakistan and India, and have placed doubt on the ability of the Indus Water Treaty to address future water sharing issues. The Indus Water Treaty will need to be updated to take climate change and population growth into account.

Unresolved issues over water resources in Kashmir and the possibility of conflict would increase the likelihood of migration, particularly in Pakistan. India will need to ensure that there is more transparency and greater consultation in projects which can affect water supply in neighbouring Pakistan. This will help ensure tensions are eased and water can be managed effectively to prevent shortages.

The Brahmaputra River and China-India Relations

The Brahmaputra River is strategically important to China because of its hydropower potential. China has already built one dam and plans to build four more, causing significant concern for India since the north-east region of the state relies heavily on its waters. China could "close the tap" for this region, potentially forcing people to migrate. India is already highly vulnerable to climate change and has recently experienced two consecutive drought years due to El Niño. Any threat to its share of water from China could potentially lead to armed conflict. Of the 20 neighbours China shares borders with, the Indian border is the only one that remains unresolved. China, however, has shown positive signs that it is committed to finding a diplomatic solution to the issue which will reduce the likelihood of population movements within that region.

Confidentiality of Water Resource Data

Transparency and the sharing of water resource data will be essential in developing a basin-wide approach to transboundary water resource management and preventing conflict and the need to migrate. This remains a challenge due to the history of tensions and disputes

between co-riparian states in South Asia which has led to hydrological information relating to transboundary rivers including the Indus, Ganges and Brahmaputra becoming securitised and classified on the grounds of national security. Institutional arrangements for river basin-level co-operation is absent in the majority of the transboundary basins. In India, Bangladesh and Pakistan, water information is collected in a fragmented manner making water resources difficult to assess at a basin-wide level. The lack of data on these transboundary resources makes it difficult to develop treaties on the use of shared water resources, which further increases the risk of conflict in the future and forced migration due to unresolved water scarcity issues.

Climate Change and Environmental Degradation

South Asia is vulnerable to a range of natural disasters, such as floods, glacial lake outburst floods, storm surges, droughts, cyclones and heavy precipitation. Thousands of people are displaced and forced to migrate each year by extreme weather events and environmental degradation. Five of the top 16 countries identified as being at “extreme risk” of climate change by Maplesoft in 2010 are in South Asia (Bangladesh, India, Nepal, Afghanistan and Pakistan). This is due to their ‘high levels of poverty, dense populations, exposure to climate-related events, and reliance on flood- and drought-prone agricultural land’.

The Intergovernmental Panel on Climate Change (IPCC) predicts these extreme weather events will increase in both severity and frequency, threatening lives and livelihoods across the region. Climate change and extreme weather events are expected to create millions of “environmental migrants” by 2050, the majority of which will be from Bangladesh where a third of the country could be inundated due to climate change-induced sea level rise.

Reasons why people will chose to migrate will vary, with a large portion expected to be linked to water scarcity. It is expected that farm-related income could decline by as much as 25 per cent in South Asia due to diminishing crop yields, driven in part by diminished or contaminated water resources. This will force many to move to urban areas to seek employment.

Migration due to environmental degradation will be an inevitable result of climate change, particularly sea level rise. In this case migration will be a form of adaptation to climate change and will need to be supported by local and international institutions. In the past decade, however, fear of terrorism has led to the securitisation of migration, potentially reducing the options for “environmental migrants” to move to safe locations.

Conclusion

Urbanisation, climate change and a rapidly increasing population have placed significant pressure on water resources in South Asia, a region already experiencing acute water scarcity. Climate change and extreme weather events are expected to create millions of “environmental migrants” by 2050. In areas such as Bangladesh where sea level rise is expected to inundate large areas of land, mass migration is inevitable. In other areas, water scarcity alone will not trigger migration. Other factors, including political stability, water sharing agreements, domestic and transboundary water management and socio-economic

position, will determine whether people choose to migrate. Basin-wide and domestic water management is therefore vital in easing political tensions and ensuring water resources are managed and distributed fairly.

Any opinions or views expressed in this paper are those of the individual author, unless stated to be those of Future Directions International.

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